

Source Water Protection Guide for Noncommunity Water Supplies

Facility Name _____ WSSN _____
Certified Operator _____ Operator ID _____
Date _____ Well Log Available _____ Yes/No _____

You are a Noncommunity Water Supply System!

You are one of over 11,000 noncommunity public water supply systems in Michigan. These systems use ground water as the source of drinking water and typically provide water to restaurants, churches, schools, and campgrounds.

Source water assessments assigned a susceptibility rating to noncommunity systems (the potential for contamination of drinking water). These ratings ranged from **low** to **very high**.

SWAP has allowed the state to prioritize overall protection efforts based on a system's susceptibility. Although little can be done to improve geologic sensitivity to afford more protection for your well, some actions can be taken to decrease susceptibility (lessen the potential for contamination). This might mean installing a new deeper or grouted well, properly plugging an unused well, eliminating a potential source of contamination such as a fuel storage tank, a sewer line, or a septic system, or following best management practices. These practices can include properly disposing of used motor oil or following recommended practices for lawn and garden fertilizer application.

Purpose of this Guide

This guide is designed to help you, the noncommunity water supplier, evaluate the level of risk that existing well conditions or current practices pose to the water supply. This evaluation will give you a clear indication of the potential risks and suggestions for how to increase water supply protection through best management practices.



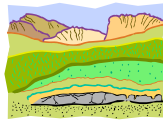
Background Information on SWAP

The 1996 amendments to the federal Safe Drinking Water Act required states to develop a Source Water Assessment Program. SWAP was designed to identify areas that supply public drinking water, assess the susceptibility of those water supplies to contamination, and inform the public of the results.

Conducting source water assessments on each well provided a means to broadly characterize sources with respect to the relative risk of contamination. The assessments were intended to assist owners and regulatory agencies in making decisions affecting drinking water systems, future sampling, and groundwater protection efforts. SWAP was completed in 2004 and assessments were sent to all noncommunity and other public water suppliers.

Source Water Assessment Structure

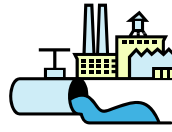
The assessment process was structured to evaluate the degree of natural (geologic sensitivity) protection afforded by the permeability of overlying geologic material like sands, gravels, clays, silts, or rock. Other factors evaluated how the location has been affected by human activities. These factors included well attributes such as depth, grouting, age, pumping rate, historic water quality results, and proximity to various sources of potential contamination. Potential contamination sources can include septic systems, sewer lines, fuel storage tanks, groundwater contamination sites, floor drains, hazardous waste storage, fertilizer and pesticide storage and use, and stormwater runoff. These human factors, combined with the geologic sensitivity, determined the overall susceptibility that was reported to each water supplier.



WELL INTEGRITY AND MANAGEMENT

(Note: information can be gathered from SWA and/or well log)

	Low Risk Recommended	Medium Risk Potential Hazard	High Risk Potential Unsafe Situation	Your Risk
Permeability of soil type/risk to groundwater	Clay (very tiny particles).	Silt/loam (midsize particles).	Sand/gravel (large particles).	
Soil Depth (clayey/loamy soils)	Deep (over 12 feet).	Moderate depth (3 to 12 feet).	Shallow (less than 3 feet).	
Soil Depth (sandy soils)	Deep (Greater than 40 feet).	Moderate (25 to 40 feet).	Shallow (Less than 25 feet).	
Bedrock	Solid, not permeable or fractured.	Solid limestone or sandstone, or fractured granite or shale.	Fractured limestone or sandstone.	
Bedrock and Casing	Bedrock surface is greater than 40 feet below ground surface and/or casing penetrates at least 50 feet into the rock.	Bedrock is less than 40 feet below surface and casing penetrates to at least 50 feet below ground surface.	Bedrock is less than 40 feet below ground surface and casing penetrates less than 50 feet below ground surface.	
Static Water Level	Over 40 feet.	10 to 40 feet.	Less than 10 feet.	
Age of the Well	Less than 10 years old.	10-25 years old.	More than 25 years old.	
Well Grouting	Drilled and grouted.	Partially or poorly grouted.	Drilled and not grouted or driven point or water jetted.	
Condition of the well casing and cap	No holes or cracks. Approved cap tightly secured. Screened vent.	Unapproved cap tightly secured. Screened vent.	Holes or cracks visible. Cap loose or missing. Water can be heard running into well.	
Protection of well casing	No herbicide, pesticide or other hazardous materials are applied near well casing. No downspouts drain on top of well casing. Ground landscaping slopes away from the well casing in all directions.	No herbicide, pesticide or other hazardous materials are applied near well casing. Downspouts drain on top of well casing.	Herbicide, pesticide or other hazardous materials are applied near well casing. Downspouts drain on top of well casing.	
Depth of the well casing	More than 100 feet, or minimum of 60 feet with 10 feet of clay or 20 feet of clay mixture (confining material).	At least 25 feet, but non confining material.	Less than 25 feet, or no casing (dug wells).	
Casing height above grade	12 inches or more.	From grade level to less than 12 inches.	Below grade, in a pit, or in a basement.	
Surveillance of Wellhead	Wellhead is readily visible for inspection and is protected from vehicular damage (snowplows, lawn mowers, cars, etc.).	Wellhead is readily visible for inspection but is not protected from vehicular damage (snowplows, lawn mowers, cars, etc.).	Wellhead is not readily visible for inspection and is not protected from vehicular damage (snowplows, law mowers, cars, etc.).	
Inspected by a registered well driller or pump installer	Within the past 10 years.	Between 10 and 20 years ago	More than 20 years ago, or don't know when the well was last inspected.	



WASTEWATER MANAGEMENT (on site disposal)

Wastewater from sinks, toilets, and showers carry dirt, soap, food, grease and bodily wastes out of your buildings. The hazardous chemicals, disease-causing microbes (pathogens) and nutrients such as phosphorus, nitrates and organic wastes found in wastewater can lead to human illness and polluted water. Wastewater must be treated before these contaminants reach groundwater in order to better protect your site's drinking water.

	Low Risk Recommended	Medium Risk Potential Hazard	High Risk Potential Unsafe Situation	Your Risk
Septic System Size	Tank and drain field designed to handle more wastewater than required.	Capacity just meets wastewater requirements.	Design capacity is much less than potential flow of wastewater.	
Age of septic system	Less than 5 years old.	6 to 20 years old.	More than 20 years old.	
Distance that separates the septic tank and drainage field from water wells	Greater than 75 feet from well.	50 to 75 feet from water well.	Less than 50 feet from water well.	
The septic tank was last pumped:	Within the past 5 years.	5 to 10 years.	More than 10 years.	
Signs of trouble with the septic system	Drains flow normally, no sewage odors inside or outside, soil over drain field firm and dry and well water tests negative for coliform bacteria.	Drains run slowly or soil over drain field is sometimes wet.	Sewage odors noticed in the facility or near the drain field, drains plugged or back up, soil wet or spongy in drain field areas or well water tests positive for coliform bacteria.	
Records maintained on septic system	Good map and records of system repairs and maintenance are kept.	Some records maintained.	No map or maintenance records kept.	
Cleaners, solvents and other chemicals poured down the drain.	Moderate use of cleaning products discharged with wastewater. Hazardous chemicals never poured down drain or toilet.	Moderate use of cleaning products. Very small amounts of hazardous chemicals poured down drain or toilet.	Heavy use of cleaning products. Hazardous chemicals discharged in wastewater.	
Grease traps	Effective grease traps are in place ahead of septic tanks and the waste is properly disposed.	Effective grease traps are in place ahead of septic tanks and the waste is not properly disposed.	Effective grease traps are not in place ahead of septic tanks and the waste is not properly disposed.	
Chemical or sewage lagoons	Greater than 800 feet from wellhead.	Greater than 150 feet but less than 800 feet from wellhead.	Less than 150 feet from wellhead.	
Feed lots	Greater than 800 feet from wellhead.	Greater than 150 feet but less than 800 feet from wellhead.	Less than 150 feet from wellhead.	
Other Issues				





MANAGING HAZARDOUS PRODUCTS

Pesticides and herbicides are hazardous products that pose minimal risks if properly used. However, if they are over applied or applied too closely to a wellhead, they have greater potential to contaminate your drinking water and nearby surface water (through runoff). Cleaning agents and improperly managed fuel can pollute the water you drink. Fuel stored in large tanks poses a greater risk of contamination than the small quantities stored for power equipment. Though you should pay particular attention to high potential risks from large tanks, you should recognize that fuel stored in any amount increases the risk to your noncommunity water supply.

	Low Risk Recommended	Medium Risk Potential Hazard	High Risk Potential Unsafe Situation	Your Risk
Pesticides, fertilizers, cleaning agents, and fuel – Storage	No products are stored on site Fuel is not stored on site.	Products are stored on an impermeable floor with no floor drain Above-ground fuel stored in secondary containment area or Underground fuel is stored in a double walled tank with cathodic (anti-corrosion) protection and the tank is more than 75 feet from the wellhead.	Products are stored in a room with a floor drain. Aboveground fuel is stored in a tank with no secondary containment. Underground fuel is stored in a tank that is not double walled with cathodic (anti-corrosion) protection, tank type is unknown or tank is less than 75 feet from the wellhead.	
Pesticides, fertilizers, cleaning agents and fuel – Use	Pesticides and Fertilizer not applied or applied based on soil tests and objectives. Cleaning Products purchased as needed, or stored in air-tight, leak proof containers. Fuel spills have never occurred.	Fertilizer applied before spring green-up. Pesticide is applied away from wellhead and containers cleaned away from wellhead. Cleaning Products purchased as needed, or stored in air-tight, leak proof containers. Fuel spills are cleaned up if they occur.	Pesticides and Fertilizer are applied over discriminate area and simply based on scheduled applications. Cleaning Products are stored in large stock in improper containers. Fuel spills are not cleaned up if they occur.	
Pesticides, fertilizers, cleaning agents and fuel – Disposal	All products are used completely or removed immediately to a hazardous waste disposal facility.	Waste products are stored on-site and disposed in a landfill away from water wells.	Products are disposed of near a well, in surface water or poured down a drain.	
Fuel Oil for Heating Storage Tanks	In an approved tank located in a basement without a floor drain.	Located outside and above-ground with secondary containment around the tank, valve, and fill pipe, and with a protective covering over the regulator and/or valve.	Located outside, above-ground, and without secondary containment. Or, located under the edge of the roof eave without a protective cover over the regulator and/or valve.	
Other Issues				



STORM WATER RUNOFF MANAGEMENT



Storm water runoff is water from rain or melting snow that does not soak into the ground. This water collects and transports soil, pet waste, salt, pesticides, fertilizer, oil and grease, yard wastes, litter and other potential pollutants as it flows over the surface of the land. Water from storm drains is not treated by water treatment plants. Polluted storm water degrades Michigan's drinking water, lakes, rivers and wetlands. Groundwater and surface water are interconnected.

	Low Risk Recommended	Medium Risk Potential Hazard	High Risk Potential Unsafe Situation	Your Risk
Car Washing wastes, automotive wastes, and grass clippings, leaves and other yard waste.	None or little waste is produced on site (vehicles taken to a commercial car wash, oil drips and spills cleaned up and kept out of storm water, yard wastes left on lawn or composted).	Some waste is produced on site (vehicles washed on a lawn or gravel drive, oil drips and spills not cleaned up right away, yard wastes piled on site for street collection).	A great deal of waste is produced on site (vehicles washed on driveways, streets or other paved areas, oil, antifreeze and other wastes dumped down the storm sewer, in ditch or on the ground, yard wastes left in paved surface to be carried off by storm water or burned on paved surface or in a ditch).	
Paved surfaces	Paved surfaces minimized. Alternatives such as wood chips or paving blocks used for walkways, patios and other areas. Very small amount of wastes run off site or toward wellhead.	Some small areas paved for patios or basketball promoting some wastes running off from surfaces toward wellhead.	Paved surfaces used extensively and a great amount of wastes run off to surface waters or wellhead.	
Roof Drainage	Downspouts and drip lines direct roof drainage onto lawn or garden where water soaks into the ground away from wellhead.	Some downspouts and drip lines discharge water onto paved surfaces or grassy areas where water runs off away from wellhead.	Most or all drip lines or downspouts flow onto paved surfaces. Or downspouts connect directly to storm drains or areas near wellhead.	
Landscaping and buffer strips	Yard landscaped to slow storm water flow and provide areas where water soaks into the ground away from wellhead. Unmowed vegetation buffer strips along streams or lakeshores.	No areas landscaped to encourage water to soak in, but yard is relatively flat and little runoff occurs toward wellhead. Mowed grass or spotty vegetation adjacent to stream or lake.	No landscaping to slow the flow of storm water to wellhead or surface waters, especially on hilly or easily eroded properties.	
Other Issues				



MANAGING SITE WASTE

The amount, type and location of wastes generated on site can have an effect on the quality of your drinking water. Composting, storing or dumping up gradient from your wellhead exposes your ground water to potential pollutants. Pollutants that run off the dump/compost site directly toward your wellhead can lead to contamination of both groundwater and surface water. Therefore it is important to be aware of how wastes are stored and disposed on your site.

	Low Risk Recommended	Medium Risk Potential Hazard	High Risk Potential Unsafe Situation	Your Risk
Waste disposal	Only organic wastes (leaves, grass clippings, food, wood chips, etc.) are disposed of on site. Waste (including compost) is stored down-gradient while waiting for removal/use.	Trash and liquids, appliances, tires and other junk are stored on site for eventual removal. Waste (including compost) is stored on site while waiting for removal/use.	Trash and liquids, appliances, tires and other junk are discarded on site. Hazardous and other wastes are improperly discarded to land surface, sewer system, septic system or storm drains. Waste (including compost) is stored up gradient while waiting for removal/use.	
Waste Liquids	Kept in secure containers in an area with secondary containment for proper disposal at an off-site location.	Stored in nonsecure containers and/or in an area without secondary containment for proper off-site disposal.	Improperly disposed of at an on-site location.	
Other Issues				

ACTION CHECKLISTS

Go back to the assessment charts in this worksheet. For each medium and high risk, write down the improvements you plan to make. Use recommendations from this worksheet and other resources to decide on action you are likely to complete. A target date will keep you on schedule. You don't have to do everything at once, but try to eliminate the most serious risks as soon as you can. Often it helps to tackle the inexpensive actions first.

Write all high and medium risks in this column:	What can you do to reduce the risk?	Target date for action:

Operator Signature _____
Health Department Contact Signature _____

For More Information, Contact:



*The information in this guide was adapted with permission from the Farm*A*Syst Farmstead Assessment System developed by Michigan State University Extension, FAS 107, Dec. 2003.*



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